

ABSTRACT OF THE DISCLOSURE

An apparatus and a method of depositing a catalytic layer comprising at least one metal selected from the group consisting of noble metals, semi-noble metals, alloys thereof, and combinations thereof in sub-micron features formed on a substrate. Examples of noble metals include palladium and platinum. Examples of semi-noble metals include cobalt, nickel, and tungsten. The catalytic layer may be deposited by electroless deposition, electroplating, or chemical vapor deposition. In one embodiment, the catalytic layer may be deposited in the feature to act as a barrier layer to a subsequently deposited conductive material. In another embodiment, the catalytic layer may be deposited over a barrier layer. In yet another embodiment, the catalytic layer may be deposited over a seed layer deposited over the barrier layer to act as a "patch" of any discontinuities in the seed layer. Once the catalytic layer has been deposited, a conductive material, such as copper, may be deposited over the catalytic layer. In one embodiment, the conductive material is deposited over the catalytic layer by electroless deposition. In another embodiment, the conductive material is deposited over the catalytic layer by electroless deposition followed by electroplating or followed by chemical vapor deposition. In still another embodiment, the conductive material is deposited over the catalytic layer by electroplating or by chemical vapor deposition.

P:\Clients\AMAT\5840.03\5840.03.doc